SEED TREATMENT

A radio talk by F. C. Meier, Principal Pathologist in Charge, Office of Barberry Eradication, Bureau of Plant Industry, delivered through WRC and 39 other radio stations associated with the National Broadcasting Company, March 5, 1931.

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Perhaps you live in an apartment house and intend to plant a window box or if the landlord won't allow this, you may be gardening on a still smaller scale. Perhaps your home is in the spring-wheat country and you are preparing to sow several hundred acres of wheat. But North, South, East, or West, if you put seed into the ground you are interested in the possibilities of seed disinfection as a means of reducing loss from plant diseases.

Farmers and home gardeners know that many troublesome plant diseases are introduced into the field or garden by seed contaminated with disease producing fungus spores. Seed treatment with chemicals or hot solutions to kill trouble-making organisms that may be present either on or underneath the seed coat or within the seed itself is often an important step in the plant disease control program. In the case of some of the most important cereal diseases it is at present the only known method of materially reducing losses.

Destructive diseases of garden flowers, tomatoes, cucumbers, watermelons, potatoes, cabbage, sweet potatoes, and many other important crops call for seed disinfection.

Before touching on some specific cases, just a word about the limitations of this method of disease control. Many fungi live over in the soil. The beneficial effects of seed treatment are often lessened by planting treated seed in contaminated soil. Hence crop rotation, and in some cases, soil disinfection and sterilization of seed bed frames and covers are important additional measures to consider.

The sweet potato growers were among the first to realize the importance of combining soil sanitation with seed disinfection. Successful growers who ship sweet potatoes from Portales, New Mexico, and from points in Georgia, Maryland, Delaware, and Virginia sections have told me that they find seed bed sanitation an important step in addition to seed potato treatment as a means of controlling black rot.

By the way, speaking of soil disinfection, just a word to home gardeners, who grow Delphiniums. Yesterday I met Dr. Weiss, plant pathologist in charge of investigation of diseases of ornamentals. He had a message on soil treatment for delphinium lovers. He says that if the delphinium bed suffered severely from root rot last year, so that only an occasional plant survives, it will be best to dig out the remaining plants, spade the bed to a depth of 6 inches, then

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drench the soil with formaldehyde solution. This requires a rather strong solution - 1 gallon of commercial formaldehyde to 50 gallons of water. Apply it at the rate of at least 2 quarts to the square foot, and preferably 1 gallon, if the soil will take up that much. Spread burlap or heavy paper over the treated bed for a day or two to retain the vapor of formaldehyde. In 2 or 3 weeks, after the formaldehyde odor has disappeared, replant the bed, preferably with healthy plants raised from seed, or with divisions of old plants which are free from any trace of root rot. The organic mercury preparations may also be used for such partial disinfection of soil with living plants present, either a liquid or dry treatment being employed. Ordinary calomel distributed over the bed at the rate of 1-1/2 ounces per square yard, then raked in to a depth of 2 inches also serves the same purpose.

Leaving the delphinium and coming back to the limitations of seed treatment, there are of course certain disease-producing organisms that come over the fence in currents of air which pass over both near-by and distant diseased fields. For protection against these, one frequently has to spray. Cucumber growers who have had experience with anthracnose realize that seed treatment alone is not sufficient to give protection against this disease.

The point is that some plant diseases call for several preventive steps. The chain of protection is no stronger than its weakest link. Now that we are getting ready to start the season, it is well to look up the facts with regard to our particular crop. If seed treatment is called for start right by including this step in your plans. It is obviously unwise to deliberately place a handicap on the crop at the beginning by putting the spores of destructive diseases in the ground with the seed. Seed treatment is often a profitable and inexpensive form of insurance.

Take for example the potato growers. Doctor Barrus, professor of plant pathology at Cornell is here in the studio with me. Many of you New York farmers know him. He tells me that practically all potato seed growers in New York treat their seed to prevent Rhizoctonia stem rot. It pays these men to do this. Dr. Barrus points out that county agent demonstrations in New York over a period of 7 years showed an average increase in yield of 25 bushels to the acre due to treatment. You Kaw Valley farmers in Kansas must be thinking---well we can beat New York when it comes to controlling Rhizoc. It is true that potato seed treatment in the Kaw Valley often gives great returns. I have helped dig fields along the Kaw River which showed increases in yield of 50 bushels to the acre due to the treatment against Rhizoctonia.

In the case of field crops, seed treatment offers a good chance for cooperation. A few years ago I spent a morning with the potato growers at their community treating plant at Iola, Wisconsin. These men had clubbed together for the purpose of building a central dipping vat and employing a man to take charge of the work. Since this is a dairy country and everybody had business at the creamery, permission was secured to establish the station near-by. Early in the morning on the day that I was with them, the farmers were riding in with their cream cans on rack wagons loaded with seed potatoes. Near-by over in Minnesota the creamery plays an even more important part for in that State the hot formaldehyde treatment is popular and the creamery boiler makes a good source from which live steam may be piped to the outdoor dipping vat, often a galvanized iron stock tank loaned by a cooperatively-minded hardware dealer.

The San Luis Obispo County, California, wheat cleaning and treating portable outfit has become famous throughout the wheat country of the United States. You may read about it in Department of Agriculture Leaflet 33, "The Combination Cleaning and Treating of Seed Wheat." Following the example of these California farmers many trucks have been mounted with wheat cleaners and equipment for applying copper carbonate dust to the grain.

Custom cleaning and treating is another outgrowth of the tremendous interest in seed disinfection, particularly in the case of the cereals.

Most seed treatments are easy to apply. They give cheap insurance against loss from disease. Whether you are a home gardener or are farming on a large scale, consult with your county agent on this subject. He has information based on state experiment station tests of important crops grown under conditions similar to yours. He can give you a copy of Misc. Pub. 94 "Seed Treatment Reduces Loss from Plant Diseases." This leaflet presents concise information concerning methods of applying treatments to more than 15 crops including ornamentals and garden vegetables.

This publication may also be obtained either by writing to your State Experiment Station or to the U. S. Department of Agriculture. Ask for Misc. Pub. 94 "Seed Treatment Reduces Loss from Plant Diseases."
